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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

AZARIAN, SEYED H

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/634,630	Applicant(s) LAUMEYER ET AL	
	Examiner Seyed Azarian	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-27, 30-44 and 48-59 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 28, 29 and 45-47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/17/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-3, 5, 7-9, 12-21, 23, 25-27, 30-38, 40, 42-44 and 48-59, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al (U.S.6, 018,697) in view of Johnson (U.S.5, 892,847).

Regarding claim 1, Morimoto discloses a method of identifying whether a plurality of image frames may contain a common object of interest comprising (Fig. 1, column 6, lines 8-21, processing unit for navigation and inputting information, also column 8, lines 10-17, recognized and comparison of distinctive object);

the steps of receiving a plurality of image frames in an image processing apparatus wherein said plurality of image frames are generated by at least one imaging device (column 6, lines 66 through column 7, line 12, receives information relating to position, GPS and a VICS receiver, also column 19, lines 22-30, road sign or different images);

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and using said image processing apparatus to identify image portions from said plurality of image frames that exhibit said differentiable characteristic in response to a logical combination of said discrete output values for each of said at least one filter for said plurality of image frames as potentially having a region of interest representing the common object of interest (column 2, lines 43-56, wherein a characteristic or distinctive object at the intersection, also Fig. 13, column 12, line 55 through column 13, line 14, number of segmentation).

However regarding claim 1, Morimoto does not explicitly state “applying at least one filter to each of said plurality of image frames to generate a discrete output value”. On the other hand Johnson teaches (column 5, lines 45-53, image using a first Reed Spline Filter, an image classifier, a discrete cosine transform, a second and third Reed Spline filter, a differential pulse code modulator, an enhancement analyzer).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Morimoto invention according to the teaching of Johnson because combination of Morimoto and Johnson provides successive file segment and enhances the quality of displayed picture, which implements in an image processing device.

Regarding claim 2, Morimoto discloses the method of claim 1 wherein image frames not having at least a potential region of interest are discarded from further processing (Fig. 30, column 19, lines 21-42, discarding the sign fro re-searching).

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Regarding claim 3, Morimoto discloses the method of claim 1 wherein said common object of interest is a two-dimensional object (column 14, line 66 through column 15, line 13, refer to two point of object).

Regarding claim 5, Morimoto discloses the method of claim 1 wherein said plurality of image frames is generated by at least two imaging devices (column 6, line 66 through column 7, line 13).

Regarding claim 7, Morimoto discloses the method of claim 3 wherein said at least two imaging devices have overlapping fields of view (column 15, lines 14-36, by overlapping the present position of the vehicle).

Regarding claim 8, Morimoto discloses the method of claim 3 wherein said at least two imaging devices have different fields of view selected from the set consisting of: a side view, a forward view, a downward view and a rearward view (column 6, lines 40-56, displaying all necessary picture for navigation).

Regarding claim 9, Morimoto discloses the method of claim 1 wherein said plurality of image frames are operably generated by a digital image capture device that is recording said digital image as images selected from the set consisting of: live images, pre-recorded images, a series of still images or a digitized version of an original analog image sequence (column 8, lines 5-17, refer to analog and digital signals).

However regarding claim 13, Morimoto does not explicitly state, "image frames in a three-dimensional representation based on a location of region of interest". On the other hand Johnson,

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teaches (column 45, lines 7-28, images can applied iteratively, in multiple dimensions and in either the image or image conjugate domain).

Therefore it would have been obvious to a person of ordinary skill in the art at time the invention was made, to modify Morimoto invention according to the teachings of Johnson because its provides the enhancement analyzer to determine the visual priority of image.

Regarding claim 15, Morimoto discloses the method of claim 1 further comprising the step of: relating each image portion with a location data metric associated with that image portion (Fig. 17, column 13, lines 15-30).

Regarding claim 16, Morimoto discloses the method of claim 1 wherein the step of using said image processing apparatus to identify image portions comprises saving to a separate memory each of said separate image portions (column 7, lines 48-67, memory 41 and memory 44).

Regarding claim 17, Morimoto discloses the method of claim 1 wherein the step of using said image processing apparatus to identify image portions comprises creating a record in a database of a pointer to a bitmap image representing each of said separate image portions (column 10, line 65 through column 11, line 4, refer to portion of display).

Regarding claim 18, Morimoto discloses the method of claim 1 wherein said image frames comprise a large number of frames of digitized image data and the method is used as part of a graphic-based search engine to recognize a desired single object within said large number of

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frames of digitized image data (column 3, lines 28-51, image recognition means determine coordinates of the position of the recognized distinctive object).

Regarding claim 19, Morimoto discloses an image processing apparatus for determining whether a plurality of image frames may contain a common object of interest, said apparatus comprising: a frame buffer that stores digitized pixels of said plurality of digitized image frames wherein said plurality of image frames are generated by at least one imaging device, at least one filter operably connected to said frame buffer that generates a discrete output value in response to each pixel of each image frame, wherein each filter screens for a differentiable characteristic associated with an object of interest that is unique to that filter; and an image processor that identifies image portions from said plurality of image frames that exhibit said differentiable characteristic in response to a logical combination of said discrete output values for each of said at least one filter for said plurality of image frames as potentially having a region of interest representing the common object of interest (see claim 1, also (Fig. 1, column 6, lines 9-22, information storage for storing navigation).

Regarding claim 36, Morimoto discloses a computer-readable storage media storing: at least one computer program that operates to identify whether a plurality of image frames may contain a common object of interest by: applying at least one filter to each of said plurality of image frames to generate a discrete output value, wherein each filter screens for a differentiable characteristic associated with an object of interest that is unique to that filter (see claim 1, also column 6, lines 40-56 refer to computer and storing data).

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Regarding claims 21, 23 and 25-26, it recites similar limitation as claims 3, 5, 7 and 8, are similarly analyzed.

Regarding claims 12, 20, 27 and 30, it recites similar limitation as claims 1 and 9, are similarly analyzed.

Regarding claims 33-35, it recites similar limitation as claims 16-18, are similarly analyzed.

Regarding claims 37-38, 40 and 42-44, it recites similar limitation as claims 2-3, 5 and 7-9, are similarly analyzed.

Regarding claims 50-59, it recites similar limitation as claims 1, 15-18 and 36, are similarly analyzed.

Regarding claims 14, 31-32 and 48-49, it recites similar limitation as claims 1 and 13, are similarly analyzed.

3. Claims 4, 6, 22, 24, 39 and 41, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al (U.S.6, 018,697) in view of Johnson (U.S.5, 892,847) as applied to claims above and further in view of Yuen (U.S.5, 949,914).

However regarding claim 4, neither Morimoto nor Johnson explicitly state “generates images in a spectral band other than the visible spectrum”. On the other hand Yuen, teaches (column 2, lines 36-50, generating multi-spectral images from first image data having at least two spectral bands).

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Therefore it would have been obvious to a person of ordinary skill in the art at time the invention was made, to modify Morimoto and Johnson invention according to the teachings of Yuen because its technique that desirable to increase the resolution of the image data from detectors that detect a specific spectral band for accuracy.

Regarding claims 6, 22, 24, 39 and 41, it recites similar limitation as claims 1, 2 and 4, are similarly analyzed.

Allowable Subject Matter

4. Claims 10-11, 28-29 and 45-47, would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance.

With respect to claims 10, 28 and 45, closest prior art of Morimoto, Johnson and Yuen do not disclose or suggest, among other things, " segmenting frame into a plurality of non-overlapping image segments, identifying a segment that exhibits a differentiable characteristic as a search space; and expanding said search space to include segments adjacent to said segment that exhibits the differentiable characteristics.

Additionally with respect to claims 11, 29 and 46, the closest prior art of Morimoto, Johnson and Yuen also do not disclose or suggest, among other things, " utilizing morphology

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techniques to grow and erode search space by adding or subtracting segments adjacent search space until either search space meets or fails to meet uniform criteria for a differentiable characteristic.

Other prior art cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. patent 5,991,085 to Rallison et al is cited for head-mounted personal visual display apparatus with image generator and holder.

U.S. patent 5,392,365 to Steinkirchner is cited for apparatus for detecting text edges in digital image processing.

U.S. patent 5,699,444 to Palm is cited for method and apparatus for using image data to determine camera location and orientation.

Contact Information

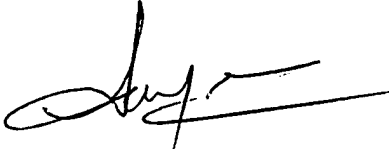
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seyed Azarian
Patent Examiner
Group Art Unit 2625
October 7, 2005



SANJIV SHAH
PRIMARY EXAMINER